

## Appendix 1 FB-DAP Simple Human Machine Interface

In addition to timer, counter, register, and contact data access function, the date setter of FB-DAP can connect to many others for alarm message display, self-defined buttons, wireless card reading, and the like simple human-machine (HM) functions.

### ■ FB-DAP Simple HM

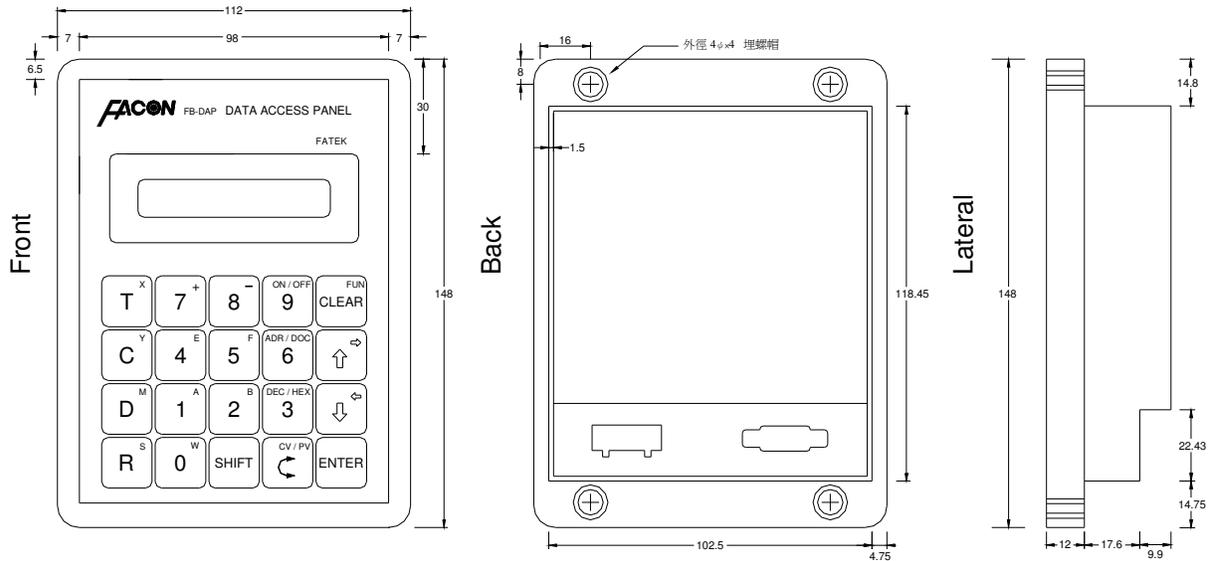
Model	FB-DAP-A(R)	FB-DAP-B(R)
Spec.		
Display	LCD (English version), 2-line×16-character, LED backlight	
Button	20-key (4×5)	
Wireless Card reading	-AR and(BR only) , distance 12~18cm	
Power supply	5V	24V
Current consumption	100mA (120mA)	41mA (48mA)
Com. Interface	HCMOS	RS-485
Service points connected	Single set	Max. 16-set connected
PLC Com. Port connected	port 0	port 0,1,2 (In which port 0 and 1 needed to be converted as RS-485)
General feature	Timing/counting , register , contact access(write protected for each)	
Special feature	Alarm , message display , self-definition of special speed keys	
Card writing feature	Order for machine types with special numbers to us is required	

※ PLC's MA , MU type machines can be connected to FB-DAP-B(R) only through FB-485 switch.

### ■ Wireless sensing card

Model	CARD-1	CARD-2
Spec.		
Memory	64bits with Cyclic Redundancy Check (CRC) on data	
Operation temp.	-25℃~50℃ (conforming to ISO7810)	
Power supply	Battery not required (power supplied from wireless electric waves released by an -AR/-BR card-reading module)	
Sensing distance	12cm~18cm(from FB-DAP front)	
Number of writing	unwritable(uncopiable , exclusively)	10000 times at least
Size (mm)	86×54×13	
Weight (Gram)	12	

## 1.1 Profile



## 1.2 Important points before operation

- 1、FB-DAP possesses a function to return to the operation mode (general data setter and self-definition 8/16 speed keys) before power failure and each DAP can be place in a different mode when connecting many sets.
- 2、When operating FB-DAP, D2944~D3071 register of PLC will be used as the systematic architecture zone (in which data set by all the FUN functions can be stored except item 11), the user shall avoid this zone.
- 3、Any communication port, once converted to a RS-485 interface (port 2 is itself a RS-485 interface), can be connected to a maximum of 16 FB-DAP-B(R) sets.

PLC port0 (HCMOS)	⇒	FB-485P0 switch head	⇒	RS-485 interface	} Only thus so the FB-DAPB (R) can be connected to.
PLC port1 (RS-232)	⇒	FB-485 switch	⇒	RS-485 interface	

- 4、When PLC is connected with FB-DAP-B(R), the service point numbers of PLC are limited to a range of 1~32.
- 5、Parameters for the connection between PLC and FB-DAP-B(R)(DAP automatic detection Baud Rate 9600 / 19200 / 38400)  
port0、1、2 : 9600 / 19200 / 38400、Even、7Data bits、1Stop bit  
ex : R4158=5521H, i.e. port2 being 9600 ; R4158=5523H, i.e. port2 being 38400.
- 6、When many sets of DAP are connected, if any two or more have the same service point number, then DAP will request for number change, which can be done by only entering " [C] + [D] + [new DAP] + [ENTER] " 即可。
- 7、The transmission line of the RS-485 interface must use a twisted pair with a shielded cover on the outer layer. Please refer to chapter 12-5 in the Operation Manual II for other important points.
- 8、The scanning time of PLC will affect the update time of DAP.
- 9、The OS of FB-DAPB(R) shall be new V2.00 above PCB so that multiple sets can be connected. Press [SHIFT] + [FUN CLEAR] + [↓] then the OS version is displayed.
- 10、When PROLADDER(or FP07) and DAP are connected to the same set of PLC, to change the program through PROLADDER is not allowed; if so, the timer information displayed by DAP won't be correct (In this

case, the DAP shall be reset).

11 - Versions after the OS V3.15 (including) of FP-07 can be aimed for DOCs in 16 words of contacts, registers.

### 1.3 The Main Functions of FB-DAP

The main functions of FB-DAP can be categorized as : setter functions of general information, FUN functions of parameter setting, wireless card reading, and message display function. The details of the functions will be introduced in the following sections.

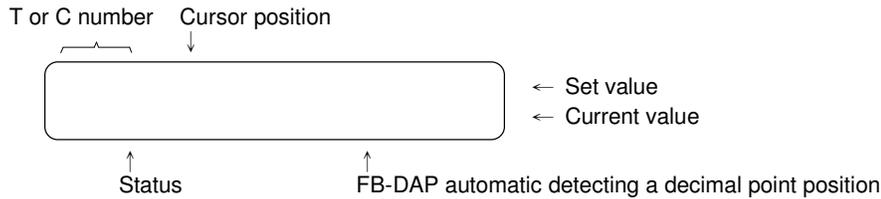
### 1.4 Setter Functions of General Information

FB-DAP can be used as a "TC setter" as well as the access to registers (R · D · W) and contacts (X · Y · M · S). In the FUN functions in the following sections, it can also be used as write-protect with T · C · R · D · X · Y · M · S. There are two measures to monitor information: ADR (general addresses) and DOC monitoring. The latter shall make DOC compilation (16 words in English, symbols, numbers) in advance through Proladder or FP07 for T, C, register R/D and contacts so the DOC can be displayed.

#### 1 - ADR Monitoring

##### A. Timer and Counter Monitoring

【Pressing Keys】 :  $\boxed{T^x}$  or  $\boxed{C^y}$  +  $\boxed{\text{number}}$  +  $\boxed{\text{ENTER}}$



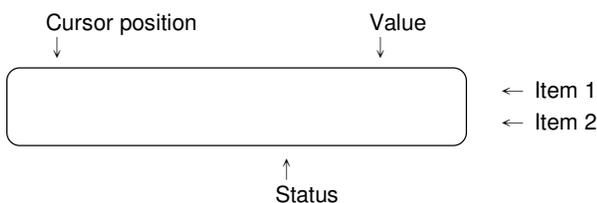
##### B. Registers (R · D · DR · DD · WX · WY · WM · WS) and contacts (X · Y · M · S) monitoring

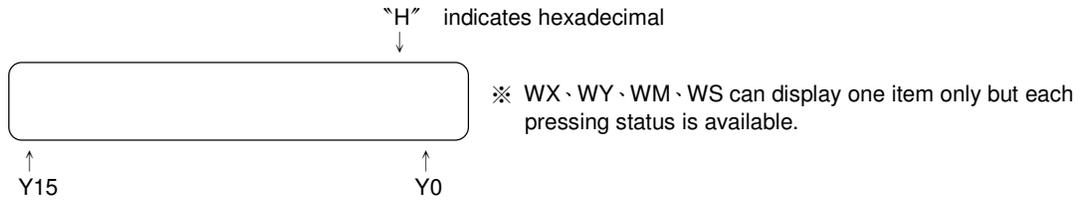
【Monitored range】

Type	T	C	D	R	DD	DR	WX	WY	WM	WS	X	Y	M	S
Range	0   255	0   255	0   2943	0   8071	0   2492	0   8070	0   240	0   240	0   1984	0   984	0   255	0   255	0   2001	0   999

【Pressing keys】 :  $\boxed{R^s}$  or  $\boxed{D^m}$   
 $\boxed{D^m}$  + (  $\boxed{R^s}$  or  $\boxed{D^m}$  )  
 SHIFT  $\boxed{0^m}$  + SHIFT (  $\boxed{T^x}$  or  $\boxed{C^y}$  or  $\boxed{D^m}$  or  $\boxed{R^s}$  )  
 SHIFT (  $\boxed{T^x}$  or  $\boxed{C^y}$  or  $\boxed{D^m}$  or  $\boxed{R^s}$  )

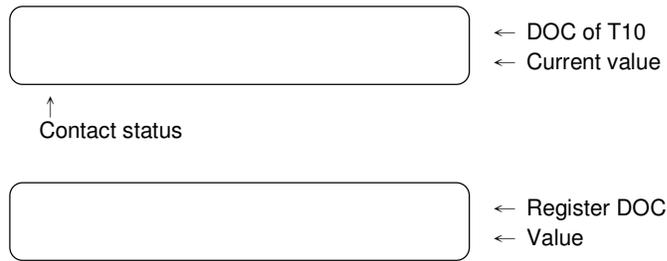
}  $\boxed{\text{DOC}}$  +  $\boxed{\text{ENTER}}$





- Note :
- 1 · Pressing can move the cursor up and down or switch between CV or PV.
  - 2 · Pressing or can decrease or increase the monitored item number.
  - 3 · For a monitored item value, input a new value directly and then press . The status of the contacts can be changed by pressing + .
  - 4 · Pressing + can change the means to display a value (either with decimal or hexadecimal system).

## 2 · DOC monitoring



- Note :
- 1 · Pressing + can switch the monitoring of ADR and DOC.
  - 2 · The display switch between CV (current value) and PV of the timer (counter) can use .
  - 3 · or can be moved up or down to next monitored item with DOC.

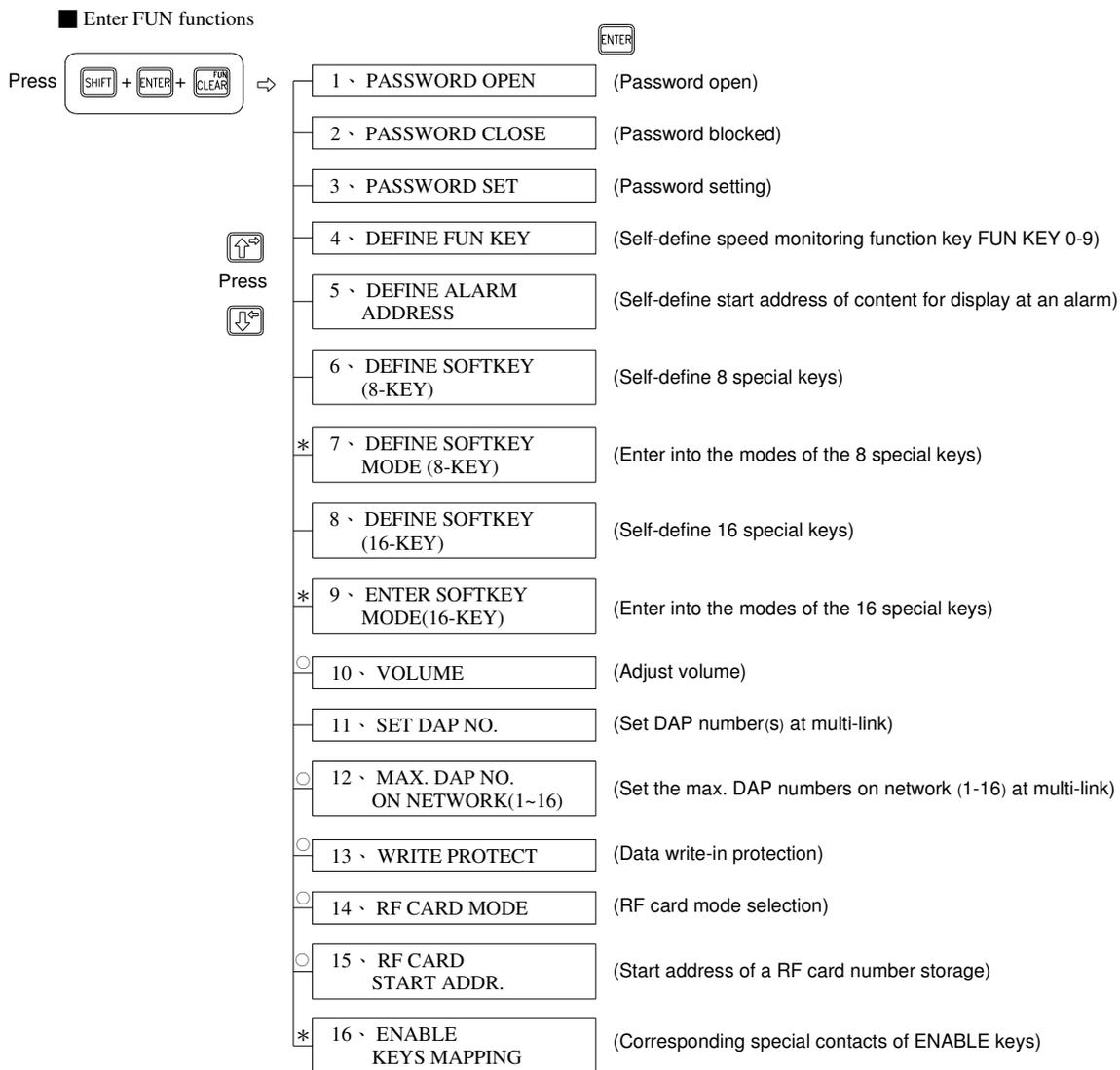
## 3 · Speed monitoring FUN keys(FUN KEY 0~9, totaling 10 keys)

【Pressing keys】 : + ( ~ ) ⇒ Direct display of a monitored item set by the client.

- Note :
- 1 · Items to be monitored can be set from the following “FUN functions”.
  - 2 · Items to be monitored can be displayed with general or DOC means.

## 1.5 FUN Functions

### 1.5.1 In and out of FUN functions



\* : Indicates when multiple DAPs are connected, each DAP can be set respectively.

○ : Indicates when multiple DAPs are connected, the information set by one of them is not available for use until PLC is reset.

■ Exit of FUN functions to general information setter functions. Press  +  + 

Note: 1、When several DAPs are connected, information can be stored to PLC (D2944~D3071) if one of the DAP is set in all the FUN functions (except item 11).

2、After entering FUN 4~15, without password protection, all the FUN functions can be executed by only pressing . With password protection, it is required to pass it first before executing FUN functions.

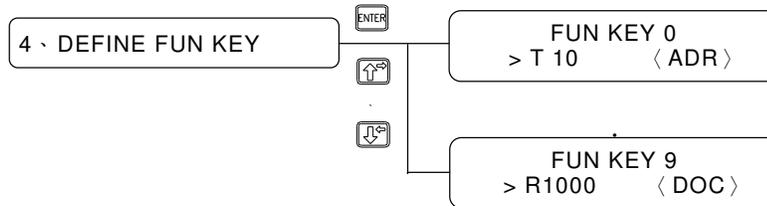
3、If it is password-protected, FB-DAP will be set in a password protection status at each beginning of operation.

4、FUN items 1~9 can be entered with numeric keys directly and then go straight to that function.

5、After executing a item of FUN functions, if execution of other items is required, press the three keys  again.

## 1.5.2 FUN function description

- FUN 1~3 (password)
  - 1、 Password contains up to 4 digits (unrelated to LADDER program's password) .
  - 2、 After the password is set, it will enter a password-locked status once it is started.
  - 3、 After the password is locked, all the FUN functions are not available.
- FUN 4 (DEFINE FUN KEY) : Self-setting speed monitoring function keys



- 1、 There are ten self-setting speed monitoring function keys in total.
  - 2、 All items available for monitoring can be defined in the ten function keys.
  - 3、 Pressing **SHIFT** + **NUM 6** can select ADR or DOC.
- FUN 5 (DEFINE ALARM ADDRESS) : The address for display at self-setting an alarm.
    1. There are ten start addresses, that is, ten levels of alarm signals.
    2. All items available for monitoring can be defined in the said ten start addresses.
    3. Pressing **SHIFT** + **NUM 6** can select ADR or DOC for display.
    4. Control measures of alarm signals for display are shown as follows :

### 【Corresponding list for control】

Alarm level (priority sequence)	Control contact	Indication register	Start address of the content displayed
ALARM 0	M1900	R3820	Client-defined
ALARM 1	M1901	R3821	Client-defined
⋮	⋮	⋮	⋮
ALARM 9	M1909	R3829	Client-defined

【Example】 Assume the start address of ALARM 0 displayed content to be R100,

If M1900=1 then the alarm address for display is R100 + ( R3820 )

- If R3820=0 ⇨ Display address or DOC of R100
- R3820=1 ⇨ Display address or DOC of R101
- R3820=2 ⇨ Display address or DOC of R102

Note 1 : When a multi-level alarm occurs, only the address or DOC with priority can be displayed. The address or DOC of a sub level alarm will not be displayed until this alarm with priority is released.

Note 2 : To display a DOC (message) with 16 digits above, the corresponding indication register (R3820~R3829) content can be changed anytime to reach this purpose.

Note 3 : M1911 can control whether to sound the alarm buzzer. If M1911=0 (preset), it shall be activated.

- FUN 6 ( DEFINE SOFTKEY – 8 KEYS ) : Self-defining 8 soft keys  
FUN 7 ( ENTER SOFTKEY MODE – 8 KEYS ) : Enter 8 soft key mode

1. Can self-define 8 soft keys : 、、、、、、、
2. Definable range : R0~R3839、D0~D2943、M0~M1899.
3. In defining M0~M1899, this key can be defined as one of the 5 modes.

Mode	Definition	Description
0	Set (S)	Set this contact to 1
1	Reset (R)	Set this contact to 0
2	Moment (M)	1 in pressing, 0 in being released
3	Inverse (I)	Pressing once will have one inverse phase.
4	Monitor (V)	Monitor this contact

【Example】 Assume definition as R0, definition as M0 mode 0(Set). Once enter the 8 soft key mode in function 7,

Then pressing ⇒ display address or DOC of R0.

⇒ display address or DOC of M0 and force M0 ON

Note 1 : After defining the 8 soft keys, once function 7 is executed, it will enter 8 soft key operation mode. And then the 8 soft keys will be executed according to function 6 definitions.

Note 2 : 、 both are allowed out of definition, but the other keys will not be effected without definition.

Note 3 : To return to normal operation mode, press “ + (D2972 content) + ”, among which D2972 content is from 0000~9999 ( 4 digits required ) .

- FUN 8 ( DEFINE SOFTKEY – 16 KEYS ) : Self-define 16 soft keys  
FUN 9 ( ENTER SOFTKEY MODE – 16 KEYS ) : Enter 16 soft key mode

1. Available for defining 16 soft keys : 、、、、、、 ~
2. Definable range : T0~T255、C0~C199、R0~R3839、D0~D2943、M0~M1899。
3. In defining M0~M1899, this key can be defined as one of the 5 modes and when a message is being displayed, if the key is pressed, the display will not be changed.

Mode	Definition	Description
0	Set (S)	Set this contact to 1
1	Reset (R)	Set this contact to 0
2	Moment (M)	1 in pressing, 0 in being released
3	Inverse (I)	Pressing once will have one inverse phase.
4	Monitor (V)	Monitor this contact

4. When defined as T, C, R or D, the value change is by pressing or to make the corresponding M1840~M1871 ON (the client is required to write a plus/minus 1 program in the LADDER program) to achieve this purpose.

Soft key	0	1	2	3	4	5	6	7	8	9	T	C	D	R	SHIFT	
	M1840	M1841	M1842	M1843	M1844	M1845	M1846	M1847	M1848	M1849	M1850	M1851	M1852	M1853	M1854	M1855
	M1856	M1857	M1858	M1859	M1860	M1861	M1862	M1863	M1864	M1865	M1866	M1867	M1868	M1869	M1870	M1871

【Example】 Assume  definition as R0,  defined as M0 mode 1 (Reset).

After entering 16 soft key mode in function 9,

Press  ⇒ Display the address or DOC of R0, and then pressing , its corresponding M1850 will be ON; OFF after it is released.

 ⇒ Display the address or DOC of M0 and force M0 OFF.

Note 1 : After the 16 soft keys are defined, once function 9 is executed, it will enter 16 soft key operation mode and then the 16 soft keys will be executed according to function 8 definition.

Note 2 : to return to normal operation mode, press “  + (  +  +  +  ) +  ” .

- FUN 11 ( SET DAP NO. ) : When several sets are connected, set DAP number.

After any communication of FB-PLC is converted to RS-485 interface (Among which port2 as such is a RS-485 interface), the FB-DAP-B(R) of the 16 sets can be connected. Each DAP shall need a unique number, 1~16 (but one of them must be number 1). This DAP is not related to PLC numbers, meaning the number can have the same PLC number.

- FUN 12( MAX. DAP NO. ON NETWORK ):when several sets are connected, set the biggest DAP number on the Web. (Max. 16 DAPs, preset 7)

In a connection of several sets, FB-PLC can be joined with new DAPs. But the more the DAP number, the longer the time to update information of each DAP. As a result, set the DAP number (the DAP number can not be bigger than this number) on the Web appropriately will decrease time for information to update.

- FUN 13 ( WRITE PROTECT ) : Information write in

Aimed for monitored items (T, C, R, D, Y, M, S), set the information in write-in protection separately. Just fill in the corresponding place with 1, and then the item is write-in protected and can be read values only.

- FUN 14 ( RF CARD MODE ) : Wireless card reading options

- MODE= “0” ⇒ When reading a RF card, it will display whether this card is OK or Error. When the RF card is out of sensing distance, it will pop up “NEXT” , indicating another RF card is available now.

MODE= “1” ⇒ once a RF card is read, it will beep once and will not display any information so the sensing speed can be faster. But when many DAPs are connected, this mode will increase by about 60mS to each set for monitored item information.

- FUN 15 ( RF CARD START ADDR. ) : Start addresses storing the wireless RF card numbers

Store a card number’s address can be set through the function, ranging from D0~D2860 (preset to D2860). Please refer to the Wireless Card Reading Functions in 1.6 for detailed description.

- FUN 16 ( ENABLE KEYS MAPPING ) : Corresponding special contact of Enable key

After this function is set to “Enable” and enter SOFTKEY MODE (8KEYS and 16KEYS) , pressing a definable soft key will force ON some contact of a corresponding contact under its number and the other contacts become OFF. When set to “Disable”, the corresponding special contact of this DAP will not be effected.

The following is corresponding special contacts to different DAP keys when in 16 KEYS MODE:

KEY No.	T	C	D	R	7 (↑)	4 (↓)	1	0	8	5	2	SHIFT	9	6	3	↻
1	M1784	M1785	M1786	M1787	M1788	M1789	M1790	M1791	M1792	M1793	M1794	M1795	M1796	M1797	M1798	M1799
2	M1768	M1769	M1770	M1771	M1772	M1773	M1774	M1775	M1776	M1777	M1778	M1779	M1780	M1781	M1782	M1783
3	M1752	M1753	M1754	M1755	M1756	M1757	M1758	M1759	M1760	M1761	M1762	M1763	M1764	M1765	M1766	M1767
4	M1736	M1737	M1738	M1739	M1740	M1741	M1742	M1743	M1744	M1745	M1746	M1747	M1748	M1749	M1750	M1751
5	M1720	M1721	M1722	M1723	M1724	M1725	M1726	M1727	M1728	M1729	M1730	M1731	M1732	M1733	M1734	M1735
6	M1704	M1705	M1706	M1707	M1708	M1709	M1710	M1711	M1712	M1713	M1714	M1715	M1716	M1717	M1718	M1719
7	M1688	M1689	M1690	M1691	M1692	M1693	M1694	M1695	M1696	M1697	M1698	M1699	M1700	M1701	M1702	M1703
8	M1672	M1673	M1674	M1675	M1676	M1677	M1678	M1679	M1680	M1681	M1682	M1683	M1684	M1685	M1686	M1687
9	M1656	M1657	M1658	M1659	M1660	M1661	M1662	M1663	M1664	M1665	M1666	M1667	M1668	M1669	M1670	M1671
10	M1640	M1641	M1642	M1643	M1644	M1645	M1646	M1647	M1648	M1649	M1650	M1651	M1652	M1653	M1654	M1655
11	M1624	M1625	M1626	M1627	M1628	M1629	M1630	M1631	M1632	M1633	M1634	M1635	M1636	M1637	M1638	M1639
12	M1608	M1609	M1610	M1611	M1612	M1613	M1614	M1615	M1616	M1617	M1618	M1619	M1620	M1621	M1622	M1623
13	M1592	M1593	M1594	M1595	M1596	M1597	M1598	M1599	M1600	M1601	M1602	M1603	M1604	M1605	M1606	M1607
14	M1576	M1577	M1578	M1579	M1580	M1581	M1582	M1583	M1584	M1585	M1586	M1587	M1588	M1589	M1590	M1591
15	M1560	M1561	M1562	M1563	M1564	M1565	M1566	M1567	M1568	M1569	M1570	M1571	M1572	M1573	M1574	M1575
16	M1544	M1545	M1546	M1547	M1548	M1549	M1550	M1551	M1552	M1553	M1554	M1555	M1556	M1557	M1558	M1559

In 8KEYS MODE, only 8 keys  $\boxed{T^x}$ 、 $\boxed{C^y}$ 、 $\boxed{D^m}$ 、 $\boxed{R^s}$ 、 $\boxed{SHIFT}$ 、 $\boxed{\leftarrow}$ 、 $\boxed{\rightarrow}$ 、 $\boxed{\downarrow}$  are effective, i.e. number keys ineffective. And  $\boxed{\leftarrow}$ 、 $\boxed{\downarrow}$  take the positions of  $\boxed{7}$  and  $\boxed{4}$ , but it must be when both keys are defined as soft keys so that the corresponding special contacts are effective.

〈Example〉 No.2 : Pressing  $\boxed{T^x}$ , M1768 is ON and M1769~M1783 OFF.

No. 5 : Pressing  $\boxed{D^m}$ , M1722 is ON and other contacts M1720~M1735 OFF.

## 1.6 Wireless card reading functions

- An applicable RF card is an exclusive read-only card (RF-CARD-1) or readable/writable card (RF-CARD-2), in which the card number of the read-only card is unique (with 16 0~F digits), not repeatable and copyable. And card numbers read by FB-DAP-AR(BR) shall be encoded with high security.
- The sensing distance of a RF card generally is 12~18cm, but shall be kept away from electromagnetic wave interference source or high voltage power line.
- Readable/Writable cards (RF-CARD-2) can use Fatek's FB-DAP-W in special sequence numbers to write in card numbers. The card numbers are all encoded and relate to machine sequence numbers (the first 4 codes are the machine's sequence number, the last 12 codes defined by the client). Only through Fatek's FB-DAP-A(B)R can a correct numbers be read. Under FUN function 17, FB-DAP-W can be input 12 0~F digits or use  $\boxed{\leftarrow}$ 、 $\boxed{\downarrow}$  to change the card number. Finally, only place the distance of RF-CARD-2 within FB-DAP-W 12cm and then press  $\boxed{ENTER}$ , so that the card number can be written into RF-CARD-2.
- Locations and application of the card number storage

FB-DAP saves RF card numbers within sensing distance into two places in PLC. The places and application are described as follows:

4 · Fixed in R3835~R3839 ( totaling 5 registers ) : During operation, M1910 shall be controlled.

Card number format		
R3835	N1   N2	N1 : DAP number 1~16 ( i.e. 1H~10H )
R3836	××××	N2 : 52H ( R : read-only card ) or 57H ( W : readable/writable card )
R3837	××××	R3836~R3839 store 16 0~F card numbers
R3838	××××	
R3839	××××	

Application :

Only in monitoring (or8/16 soft keys) mode (non-FUN functions) and the RF card in sensing distance, FB-DAP ( -AR or -BR ) will send the RF card number together with DAP number to PLC R3835~R3839. In mode 0 of function 14 ( RF CARD MODE ) , all the client needs to do is compare the card number. If it is OK, only set M1910 to 1 and then DAP will indicate "OK", or "ERROR". When the RF card is out of sensing distance, DAP will pop up "NEXT" and clear the content of PLC R3838~R3839 to 0, which means available for another RF card. In mode 1 of function 14, as soon as DAP reads a card number, it will save it to R3835~R3839 with a beep. After the RF card exits, the 5 registers remain unchanged.

Applicable occasions :

Where one set or multiple sets are connected but RF cards are not used frequently, the program to be applied will be a lot easier. But in the event of a card number read from different DAPs at the same time, it will be difficult for PLC to identify the information correctly.

5 · Preset D2860~D2939 (16 differently-located DAP take on 5 registers individually, i.e. 80 registers in all, but the locations can be changed through function 15) control one point of M1880~M1895 separately when in use.

Card number format							
D2860	N1   N2	D2865	N1   N2	D2870	N1   N2	D2935	N1   N2
D2861	××××	D2866	××××	D2871	××××	D2936	××××
D2862	××××	D2867	××××	D2872	××××	D2937	××××
D2863	××××	D2868	××××	D2873	××××	D2938	××××
D2864	××××	D2869	××××	D3974	××××	D2939	××××
No. 1		No. 2		No. 3		No. 16	
↓		↓		↓		↓	
M1880		M1881		M1882		M1895	

Application measures :

The application measures are all described as the above-mentioned but that the storage places of card numbers and corresponding contacts for control are different. For example, in mode 0 of function 14, from No. 2 DAP sensing to the RF card, now no. 2 will send same card numbers to two different places in R3835~R3839 and D2865~D2869 (the content of the other registers remains unchanged), and all the client needs to do is control M1881 for the DAP to display "OK" or "ERROR". After the RF card exits, the content of the 10 registers R3835~R3839 and D2865~D2869 will be cleared to 0 (but remains unchanged in mode 1).

Applicable occasions :

When several DAPs are connected, the RF card can be read in from different DAPs and each DAP has its independent card numbers storage places and control points so that no PLC misjudgment case occurs, but the programming will be more troublesome.

※ If you do not want R3835~R3839 to display a card number value, you can use the Ladder program to fill in these registers with other fixed values.

## 1.7 Special message display function

In general monitoring mode and soft key mode (16 KEYS or 8 KEYS), the user can configure the DAP to display every kind of message under some circumstances, and the two-line display on the LCD can be controlled separately to simultaneously display different messages. Every message is 1~511 words and numbers (ASCII code) long, in which a maximum of 16 variables (if variables with 32-digit are not used, then it can use up to 25) can be included. When a message has more than 16 words, the message will be displaced left for display, in which the moving speed or pause time can be configured flexibly.

### 1.7.1 Message display application

The FB-DAPB(R) can be connected up to 16 sets (Number 1~16). Each DAP not only can display different messages individually but make all the DAPs connected display the same message simultaneously. If you go to a special contact (R3780~M3813) set by Enable, the DAP will display the message ASCII Code indicated by the corresponding indication register (R3780~M3813). The content of the indication register is the start register of messages, i.e. start of ASCII Code. The indication register content can be changed anytime in order to change and display different messages.

The following is a list of corresponding special contacts and indication registers when each DAP is displaying a message for control.

Number of a message displayed	LCD line 1		LCD line 2	
	Special contact	Indication register	Special contact	Indication register
1~16	M1800	R3780	M1801	R3781
1	M1802	R3782	M1803	R3783
2	M1804	R3784	M1805	R3785
3	M1806	R3786	M1807	R3787
4	M1808	R3788	M1809	R3789
5	M1810	R3790	M1811	R3791
6	M1812	R3792	M1813	R3793
7	M1814	R3794	M1815	R3795
8	M1816	R3796	M1817	R3797
9	M1818	R3798	M1819	R3799
10	M1820	R3800	M1821	R3801
11	M1822	R3802	M1823	R3803
12	M1824	R3804	M1825	R3805
13	M1826	R3806	M1827	R3807
14	M1828	R3808	M1829	R3809
15	M1830	R3810	M1831	R3811
16	M1832	R3812	M1833	R3813

※ The start register of a message indicated by an indication register means :  
 0~8070 : indicating R0~R8070  
 10000~13070 : indicating D0~D3070

※ Special contacts M1800 and M1801 have a priority display function.

※ M1911 can control an alarm buzzer whether to sound or not. If M1911=0 (preset), it shall be activated.

〈 Example 〉 Assume M1803 from 0→1, R3783=100

Result : Line 2 of No. 1 of the LCD will display messages in ASCII Code with R100 start.

〈 Example 〉 Assume M1828 from 0→1, R3808=10000

Result : Line 1 of No. 14 of the LCD will display messages in ASCII Code with D0 start.

〈 Example 〉 Assume M1801 from 0→1, R3781=0

Result : Line 2 of all the DAPs will display messages in ASCII Code with R0 start.

## 1.7.2 The Information formats of messages (ASCII Table)

The information formats of messages are very similar to the file information in ASCII in chapter 15 in the Advanced Manual that are all categorized as fixed background information and dynamic variable information. The first can be words in English, numbers, or signs, and the second binary, decimal or hexadecimal system.

Length of a message is 1~511 digits (including blank spaces), but because there are only 16 digits a line in a DAP LCD, if a message has more than 16 digits, it will be displayed automatically toward the left (preset moving one time a second); if less than 16 digits, the tail will be filled in with blank digits and no moving occurs.

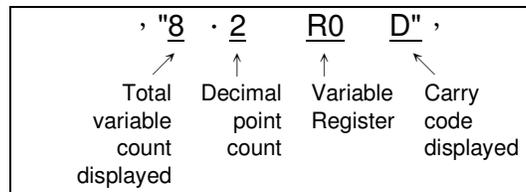
To edit a message, the WinProladder ASCII Editor can be applied. The editing command formats are as follows:

### ① Background information format

Any ASCII Code digits quoted with ' ' can be background information. To display a single quotation mark as such, two continuous quotation marks are a must. Example:

' ' 'M A BOY' will be displayed 'M A BOY

### ② Variable information format



Description information in a pair of dual quotation marks " " is used to indicate the register address (number)

storing the variable information and in what format and carry code to display.

- Total variable count displayed : In this case, the value (including minus) of the variable R0 is displayed in a field with 8 digits. If the variable value is bigger than the total variable count displayed, the digits further from the point will be cut. If not enough, blank spaces will fill in.
- Decimal point count : the decimal point count in the total digits. In this case, with a total count of 8 digits, the decimal point count is 2. The decimal point sign "." as such possesses one digit and there are 5 digits left in the integral part.
- Variable register : can be used as 16 digit register's R \ D \ WX \ WY \ ..... , or 32 digit register's DR \ DD \ DWX \ DWY \ .....etc. The content value in the register will be retrieved and displayed with the format and carry code described in the " " .
- Contacts : generally displayed as ON or OFF (total digit count displayed is set to a fixed 3), but if added with binary system B in the tail, 0/1 will be displayed (total digit count fixed 1)
- Carry code : can be hexadecimal H, decimal D (the carry code will use decimal if without indication, so D can be omitted.), or binary B, etc., but a 32 digit variable can not be displayed with binary system.

In this case, R0's content value is 32768. In 8.2 format the result is displayed as:

2	3	2	7	.	6	8	
---	---	---	---	---	---	---	--

If the format is changed from 8.2 to 5.1, then the result becomes:

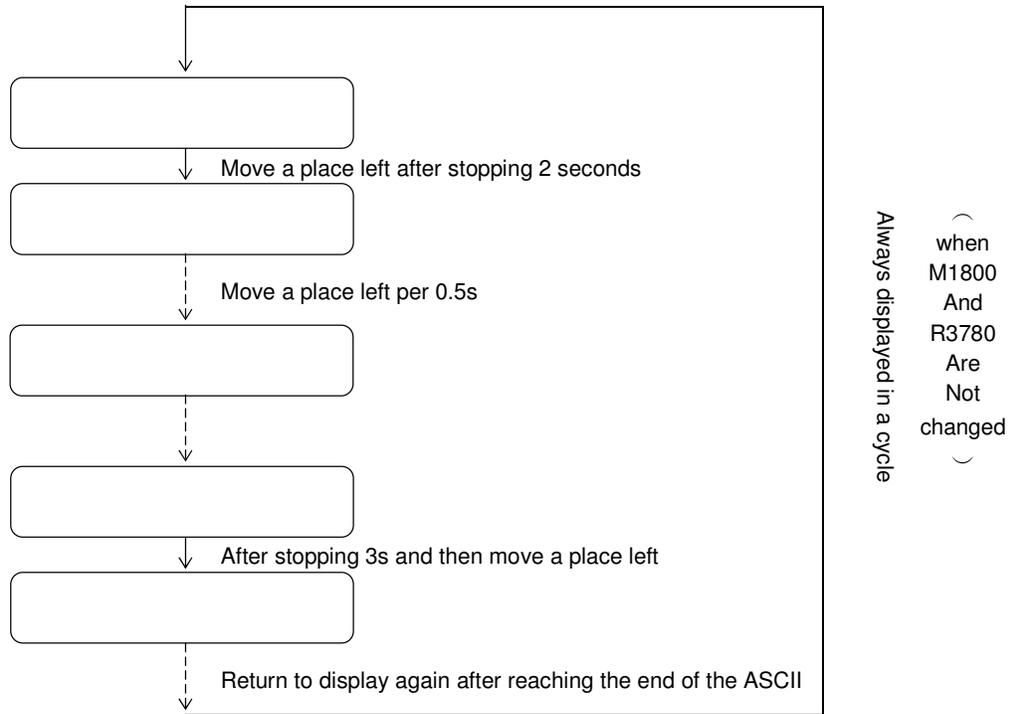
③ Basic command signs

- **nS** Left move speed (repeatable)  
Message displayed at a left LCD move per n (1~255) × 0.1s ◦
  - **nP** Stop move (repeatable)  
Message stop in (1~255) × 0.1s ◦ and then move left at a configured speed.
  - **,** Comma  
Used as a statement to divide the file information. Information between two neighboring commas is a complete and executable statement (unnecessary for the start and end of a file).
  - **END** End of a file
- ※ nS and nP commands will not be activated until after the information following them moves to the left first place on the LCD display. They can have a repeatable arrangement of any place in ASCII, but the same command cannot be connected together.

〈 Example 〉 Information edited with WinProLadder ASCII file editor. R0 is a start register of an ASCII file and the file information is shown as follows :

```
5S , 20P , 'A=' , "6.2R3840" , 'B=' , "6.2R3841" , 30P , 'C : ' , "1M0B" ,
' D : ' , "1M1B" , ' E : ' , "1M2B" , ' ' , END
```

If M1800 from 0→1 and R3780=0 (i.e. R0) , Line 1 of the LCD of DAPs of all numbers is shown as follows :



- ◆ Variable information is renewable anytime.
- ◆ To display another message, just change R3780 value and not for M1800.

# MEMO